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ABSTRACT

Ninety-six female introductory psychology students differing in terms of the dimensions of neuroticism-stability and introversion-extraversion performed two sets of thirty trials each on a choice reaction time task. On one of the sets of trials the Ss were observed by two female observers and on the other set of trials the observers were not present. The order of observer presence was counterbalanced in each of the four groups (neurotic introverts, neurotic extraverts, stable introverts and stable extraverts) of 23 Ss. The mean reaction time score of each S under the audience and the no audience conditions was analyzed using a 2 (neuroticism-stability) x 2 (extraversion-introversion) x 2 (order of audience conditions) mixed analysis of variance. The Extraversion x Neuroticism x Audience condition interaction was found to be significant at the .005 level of confidence. This interaction indicated the presence of observers inhibited the performance of neurotic introverts and facilitated the performance of stable extraverts. The Extraversion x Order x Audience condition interaction was found to be significant at the .001 level of confidence. This interaction indicated that the presence of others facilitated the performance of extraverts only if the audience condition preceded the no audience condition. (Author)

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THE INTERACTION OF EXTRAVERSION, NEUROTICISM, AND AUDIENCE PRESENCE IN THE PERFORMANCE OF A CHOICE REACTION TIME TASK

A thesis

Submitted to the Graduate Faculty of

Northwestern State University

in partial fulfillment of the requirements

for the Master of Science degree

in the Division of Psychology

in the Department of Behavioral Science

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by

Lynn Gary Calcote
B.S., McNeese State University, 1972

May 1974

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ABSTRACT

Ninety-six female introductory psychology students differing in terms of the dimensions of neuroticism-stability and introversion-extraversion performed two sets of thirty trials each on a choice reaction time task. On one of the sets of trials the Ss were observed by two female observers and on the other set of trials the observers were not present. The order of observer presence was counterbalanced in each of the four groups (neurotic introverts, neurotic extraverts, stable introverts and stable extraverts) of 24 Ss.

The mean reaction time score of each S under the audience and the no audience conditions was analyzed using a 2 (neuroticism-stability) x 2 (extraversion-introversion) x 2 (audience-no audience condition) x 2 (order of audience conditions) mixed analysis of variance. The Extraversion x Neuroticism x Audience condition interaction was found to be significant at the .005 level of confidence. This interaction indicated the presence of observers inhibited the performance of neurotic introverts and facilitated the performance of stable extraverts. The Extraversion x Order x Audience condition interaction was found to be significant at the .001 level of confidence. This interaction indicated that the presence of others facilitated the performance of extraverts only if the audience condition preceded the no audience condition. The presence of others inhibited the performance of introverts regardless of the order of the audience-no audience conditions. A tentative explanation of the Extraversion x Order x Audience condition interaction was advanced to explain this interaction with order.

CHAPTER I

Introduction

A great deal of research centers around precisely how the presence of passive spectators influences an individual's behavior. It has been found that in some instances the presence of spectators improves task performance (Triplett, 1897; Allport, 1924; Travis, 1925; Dashiell, 1930; Bergum and Lehr, 1963), but in other instances the presence of spectators has a negative effect on task behavior (Husband, 1931; Pessin, 1933; Husband and Pessin, 1933; Kopfler, 1958). Zajonc (1965) explains these apparently discrepant findings by proposing that the presence of others increases the individual's general drive level and thus enhances the emission of dominant responses. After examining social facilitation studies, Zajonc concluded that the individual's dominant task responses were correct in the studies which found social facilitation effects and incorrect in the studies which found social inhibition effects. In this explanation, Zajonc stresses the distinction between the concept of learning and performance by stating that audience presence is found to be detrimental to the learning of new responses, but facilitates the performance of previously acquired behavior and skills.

However, Schachter's (1959) and Wrightsman's (1960) findings support the view that the presence of others can be a source of comfort for highly anxious individuals and thus reduce their drive level. Cottrell (1968) cites the studies of Amoroso (1966) as supporting this drive-reduction position for task performance which has implications that are the opposite of the implications of Zajonc's position, cited by Cottrell (1968). The drive reduction position implies that the presence of others reduces the drive level of individuals who are already highly aroused and thus facilitates performance on tasks for which their dominant responses are incorrect and inhibits performance on tasks for which their dominant responses are correct.

Cottrell (1968) notes that the findings of these studies of affiliation could possibly support the position that an intermediate drive level is produced in the individual by the presence of others. If the presence of others does produce an intermediate drive level in the individual, then the presence of others should reduce drive in individuals who are initially highly aroused, while increasing drive level in individuals who have an initially low arousal level.

Cottrell (1968) has offered a modification of Zajonc's (1965) proposal which would explain the contradictory interpretations by Zajonc and by Schachter (1959). Cottrell (1968) states that it does not appear that the simple

presence of others increases drive level. He believes:

> ....the additional process involved is the anticipation of positive or negative outcomes; the presence of others has non-energizing effects upon performance only when their presence creates anticipations of positive or negative outcomes. (p. 103)

Cottrell assumes that the presence of others is a learned source of drive and this assumption has greater explanatory power than Zajonc's (1965) proposal that the presence of others is a source of drive regardless of learning history. In the light of the findings of Zajonc (1965) and of Schachter (1959) and the proposal of Cottrell (1968), it seems evident that the manner in which the individual evaluates the presence of observers is a variable of importance in the investigation of audience effects.

The importance of also taking personality variables into account when investigating audience effects has been shown by Ganzer (1968) in a study of audience and test anxiety effects on serial learning. Ganzer found that subjects who attempted to learn new material in the presence of an audience did less well than subjects who learned alone. This finding provides support for Zanjonc's (1965) observation that audience presence is detrimental to the learning of a new task. Indications in Ganzer's (1968) study that audience presence was more detrimental for high-anxious than for low-anxious subjects suggests the necessity of taking personality variables into account when investigating audience effects.

Ganzer, citing Child (1959) and Sarason (1960), chose to explain his results with a habit interpretation of anxiety instead of a drive interpretation as advanced by Zajonc (1965). Ganzer felt his findings generally fit the habit interpretation, if one assumes that observer presence constitutes a somewhat threatening situation, and especially if the observer is perceived by subjects as someone whose function is to evaluate behavior. Ganzer's interpretation, therefore, agrees with Cottrell's (1968) in respect to both the learned aspect of drive and the importance of the evaluative components present in audience effects.

A relationship exists betwen Eysenck's (1947, 1962) personality theory and the findings of Zajonc (1965), Ganzer (1968, and Cottrell (1968) which suggests that the presence of spectators who are signs for negative outcomes increases an individual's drive level. Eysenck (1964, 1967) hypothesizes that the level of arousal is a distinguishing factor between both introverts (Is) and extraverts (Es) in Eysenck's extraversion-introversion (E-I) dimension, and between neurotics (Ns) and stables (Ss) in his neuroticism-stability (N-S) dimension. Eysenck (1964, 1967) has hypothesized that E-I and N-S are related to separate arousal loops involving the reticular activating system. He states that the E-I loop functions in information-processing and the N-S loop functions in autonomic activation and emotion.

Eysenck suggests that overall activation is determined by the interaction of external sources of drive and these two activating loops. Therefore, the low attention-aroused E, who is also a low emotion-activated S, is energized minimally, while an attention-aroused I, who is also an emotion-activated N, is maximally energized. It has been hypothesized that stable-introverts (SI) and neurotic-extraverts (NE) are energized at intermediate levels. Sadler and Mefferd (1971) state that Eysenck sees drive:

> ....as influencing performance according to the Yerkes-Dodson Law (Broadhurst, 1959) that any given task has an optimal drive level. This would result in an inverted U-shaped relationship between performance and cortical arousal level determined by the nature of the task. (p. 279)

Support for this U-shaped relationship between performance and cortical arousal has been shown in verbal learning (McLaughlin and Eysenck, 1967), in instrumental advoidance learning (Otis and Martin, 1969), and operant behavior (Sadler and Mefferd, 1971). The results of these studies have suggested that high N (as measured by the Eysenck Personality Inventory) facilitates the performance of Es on tasks of low or moderate difficulty, but that high N hinders performance by Is on similar tasks.

Since it has been shown that the performance of individuals who differ in arousal level as measured by Eysenck's scales varies in predictably different ways depending upon task difficulty (Sadler and Mefferd, 1971), it

should follow that the performance of individuals who differ in arousal level should be affected in predictably different ways when their arousal level is increased by means of an audience effect.

The task chosen to study the effects of an audience upon the performance of neurotic-intoverts (NI), stable-introverts (SI), neurotic-extraverts (NE), and stable-extraverts (SE) was choice reaction time. Choice reaction time has been noted to be a task on which performance is detrimentally effected by stress (Farber and Spence, 1956). Also, simple motor responses are, according to Zajonc (1965), particularly sensitive to audience effects. Choice reaction time also has the advantage of being a task with a relatively low degree of difficulty. This low level of task complexity means the optimum arousal level for the task will be exceeded by the more aroused subjects under the experimental conditions. A further advantage of choice reaction time is that after a small number of practice trials, it provides an opportunity to study the effects of an audience on performance without the contamination of a learning effect. This advantage was important in that Zajonc (1965) stresses the distinction between learning and performance as a crucial factor in the investigation of social facilitation.

It was the purpose of the present study to investigate the effects of an audience upon the reaction performance

of neurotic-introverts, neurotic-extraverts, stable-introverts, and stable-extraverts. Specifically, it was hypothesized in this investigation that performance on a choice reaction time task would be affected by the presence of observers in the following ways:

1. Neurotic-introverts' (NI) reaction time would be longer in the presence of an audience than in a situation in which their performance was not observed by an audience,

2. Stable-extraverts' (SE) reaction time would be shorter in the presence of an audience than in a situation in which their performance was not observed by an audience, and

3. Neurotic-extraverts' (NE) and stable-introverts' (SI) performance would not be affected to a significant degree by the presence of an audience.

CHAPTER II

Method

Subjects. From a subject pool of students enrolled in Introductory Psychology at Northwestern State University, 96 white females, all 23 years old or younger, were obtained as subjects. The subjects were selected and divided into four groups (NI, NE, SI, and SE) on the basis of their scores on the Neuroticism and Extraversion Scales of the Eysenck Personality Inventory, which was administered in a classroom setting. Subjects were selected from individuals who scored in the upper and lower 30% of the 300 scores on the Extraversion and on the Neuroticism scales. Using these criteria, the NE group was comprised of individuals scoring in the upper 30% of both scales, the SI group was comprised of individuals scoring in the lower 30% of both scales, the NI group was comprised of individuals scoring in the upper 30% on the Neuroticism scale and lower 30% on the Extraversion scale, and the SE group was comprised of individuals who scored in the lower 30% of scores on the Neuroticism scale and the upper 30% of scores on the Extraversion scale.

Apparatus. A Lafayette Visual Choice Reaction Time Apparatus (Model 6302A) consisting of four switches which turn off a corresponding light and a Lafayette stop clock (Model 20225AD) were utilized. The examiner was able to

turn on one of the four lights in the predetermined random order by adjusting a dial which was located out of the subject's field of vision. The turning on of the light simultaneously started the stop clock which was electrically connected to the examiner's dial. The stop clock was stopped by the switching off of the light by the subject. In this way, it was possible to record the latency of Ss response.

Procedure. At the onset of the testing, the E informed each S that the experiment was, "a study designed to record how long it takes individuals to react to a visual stimulus." If the S requested additional information, the E agreed to answer whatever questions she had after all of the Ss had participated in the study. The reaction timer was then shown to the S and an explanation of how the apparatus operated was given (see Appendix A).

After 10 practice trials, each S was given two blocks of 30 trials each. Half of the Ss in each of the four personality groups were observed during the first set of trials and not observed during the second set. The order of conditions were reversed for the other half of the Ss, so that the observed conditions followed the non-observed condition. Between the two blocks of trials, the Ss were allowed to rest for five minutes. The subjects were randomly assigned to the order condition.

The observed condition was structured so that the performance of the subjects was observed by two female observers who had previously been instructed to pay close attention to the subject's performance. During the non-observed condition, the observers were not present.

Two random orders of light presentation were determined prior to testing (see Appendix B). Each order was used for half of the non-observed trials.

CHAPTER III

Results

The data was analyzed using a four-factor mixed design with repeated measures on one factor. Neuroticism-stability (N-S), introversion-extraversion (I-E), and order (O) effect were the between-subjects factors and the within-subjects factor was the audience (A) measure.

Means for audience and non-audience conditions were derived from each S's 30 RT scores in each set of trials. A 2 x 2 x 2 x 2 repeated measures analysis of variance was performed on this data (see Appendix C). Scheffé tests were run in order to determine significant mean differences. In addition, other Scheffé tests were run in order to make multiple comparisons.

The significant audience effect (F (1,176) = 62.1192; $p < .001$) was due to an overall slower mean RT in the presence of observers ($\bar{X}$ = .5653 seconds) than under the non-observed condition ($\bar{X}$ = .5526 seconds). This main effect can be attributed to observers inhibiting the performance of Ns and Is more than the observer presence facilitated the performance of Ss and Es. That the performance of Ns and Is were inhibited significantly ($p < .01$) more by an audience than the performance of the Es and Ss were facilitated is evidenced in the N x A interaction (F (1,176) = 205.6629; $p < .001$) and in the E x A interaction (F (1,176) = 256.2895; $p < .001$). In the N x A

interaction (Fig. 1), the difference between the means of all RT scores for observed Ns was significantly ($p < .01$) greater than the difference between RT means of observed and non-observed Ss. Similarly, in the E x A interaction (Fig. 2), the difference between the means of observed and non-observed Is was significantly ($p < .01$) greater than the difference between the RT means of observed and non-observed Es.

The O x A interaction (F (1,176) = 144.3695; $p < .001$) also showed the RTs to be slower under the observed condition than in the non-observed condition (Fig. 3). This finding is likewise due to the performances of the Ns and Is being inhibited more by the presence of an audience than the performances of the Ss and Es were facilitated by the audience. Scheffé tests showed that the group of subjects who were observed on their first set of trials and were then not observed on their second set of trials had significantly (Scheffé test, $p < .01$) lower RTs than did the group of subjects who were not observed on their first set of trials and were then observed on their second set of trials.

The N x E x A interaction (F (1,176) = 8.4456; $p < .005$) (Fig. 4) offers the clearest look at the effect observer presence had on the four personality groups (NI, NE, SI, and SE). As hypothesized, the NIs had significantly (Scheffé test, $p < .01$) shorter RTs when there was

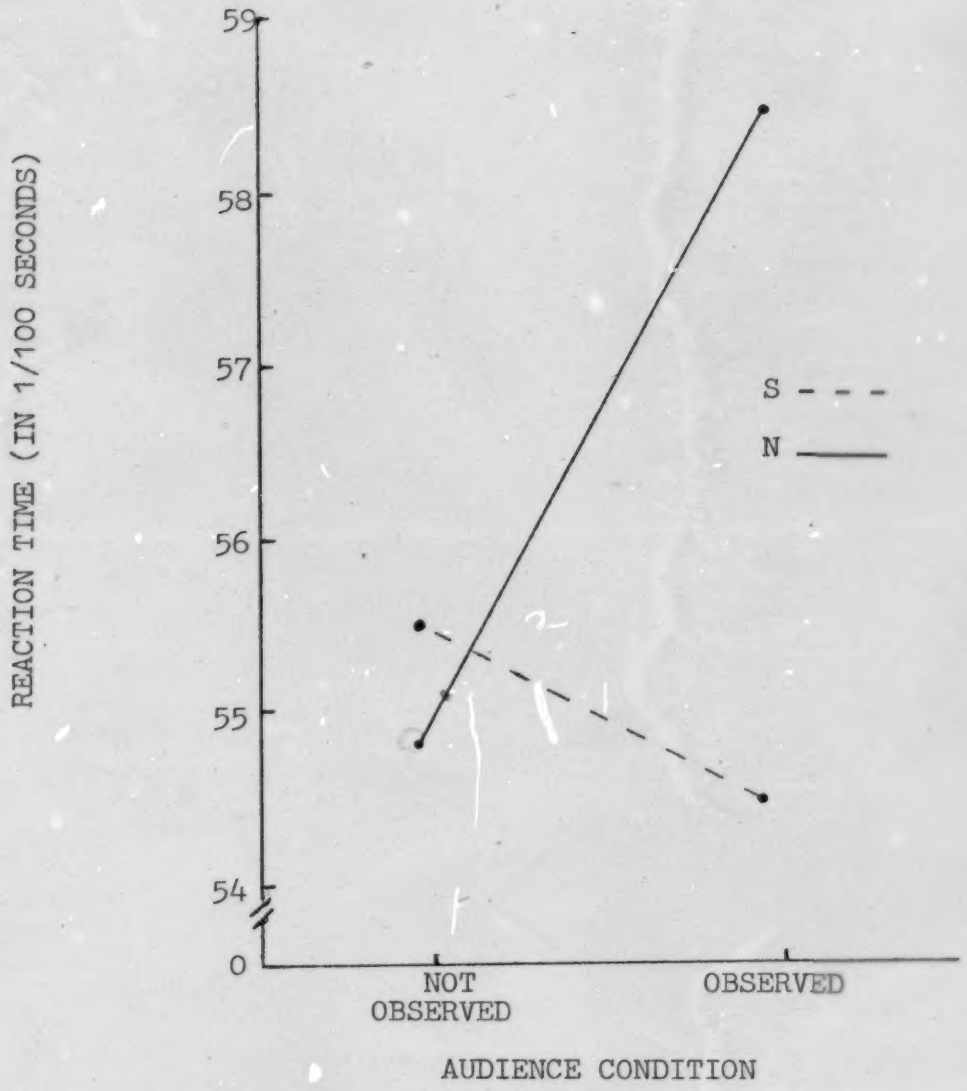

Fig. 1. Reaction time means for neurotics and stables under observed and unobserved conditions.

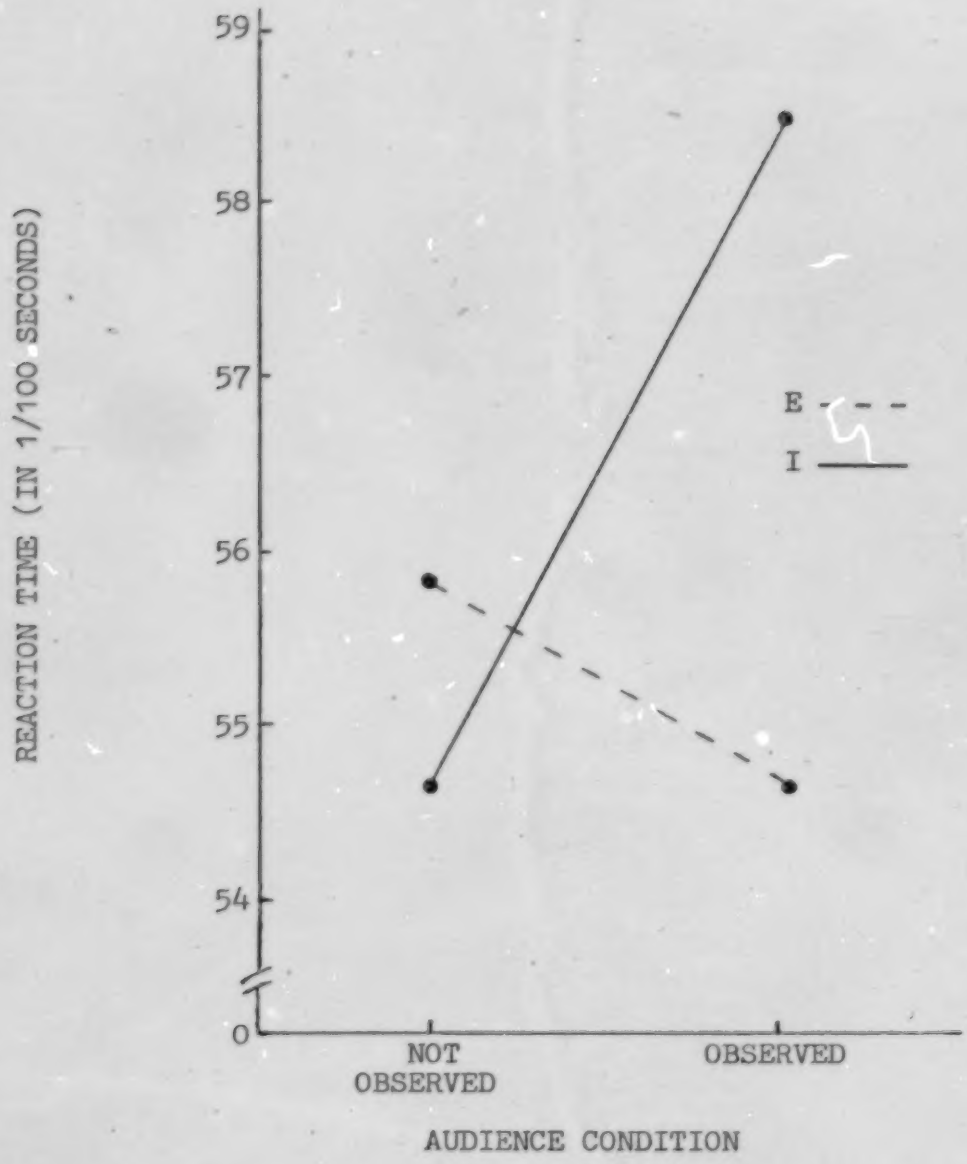

Fig. 2. Reaction time means for extraverts and introverts under observed and unobserved conditions.

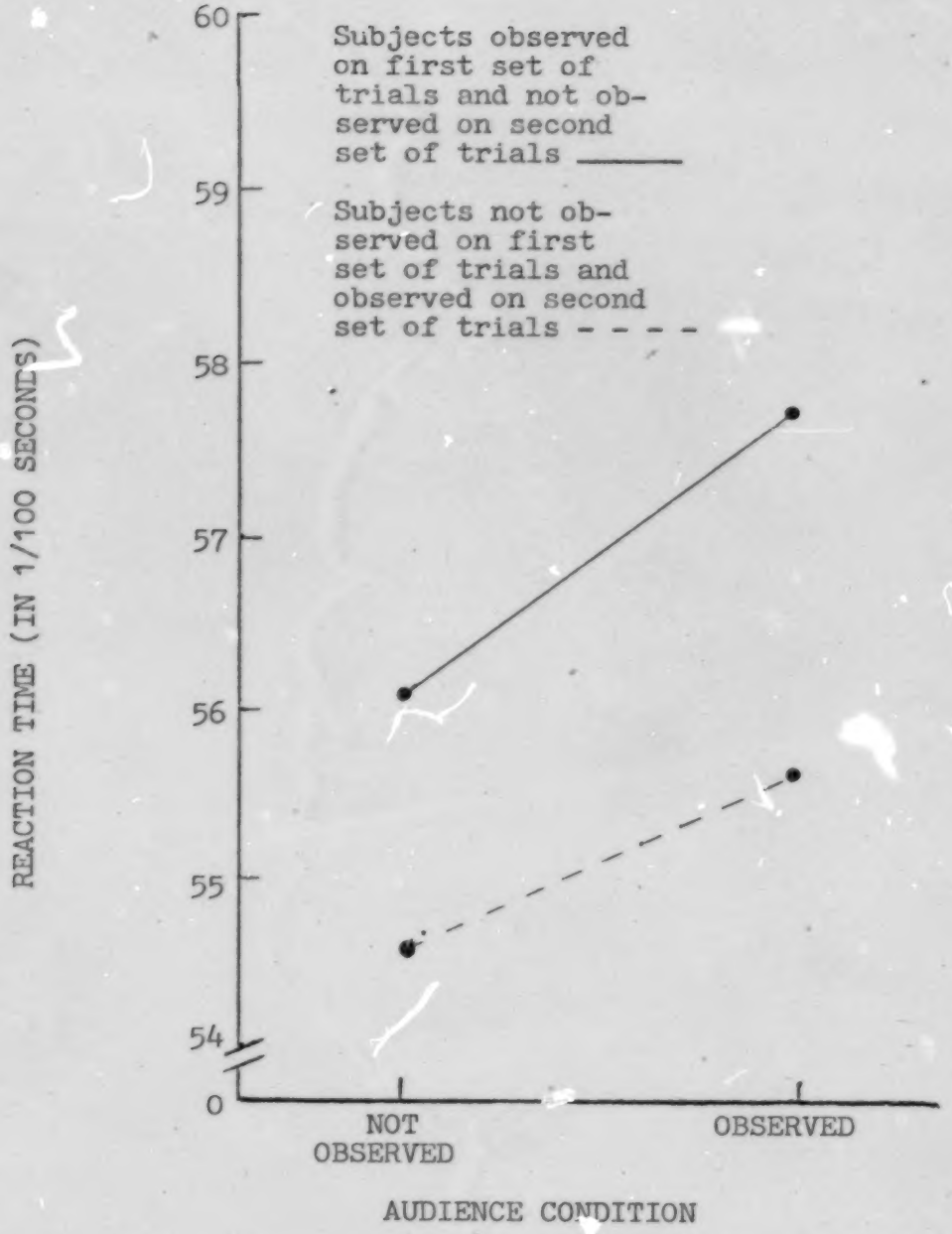

Fig. 3. Reaction time means for subjects observed on the first set of trials and subjects not observed on the first set of trials

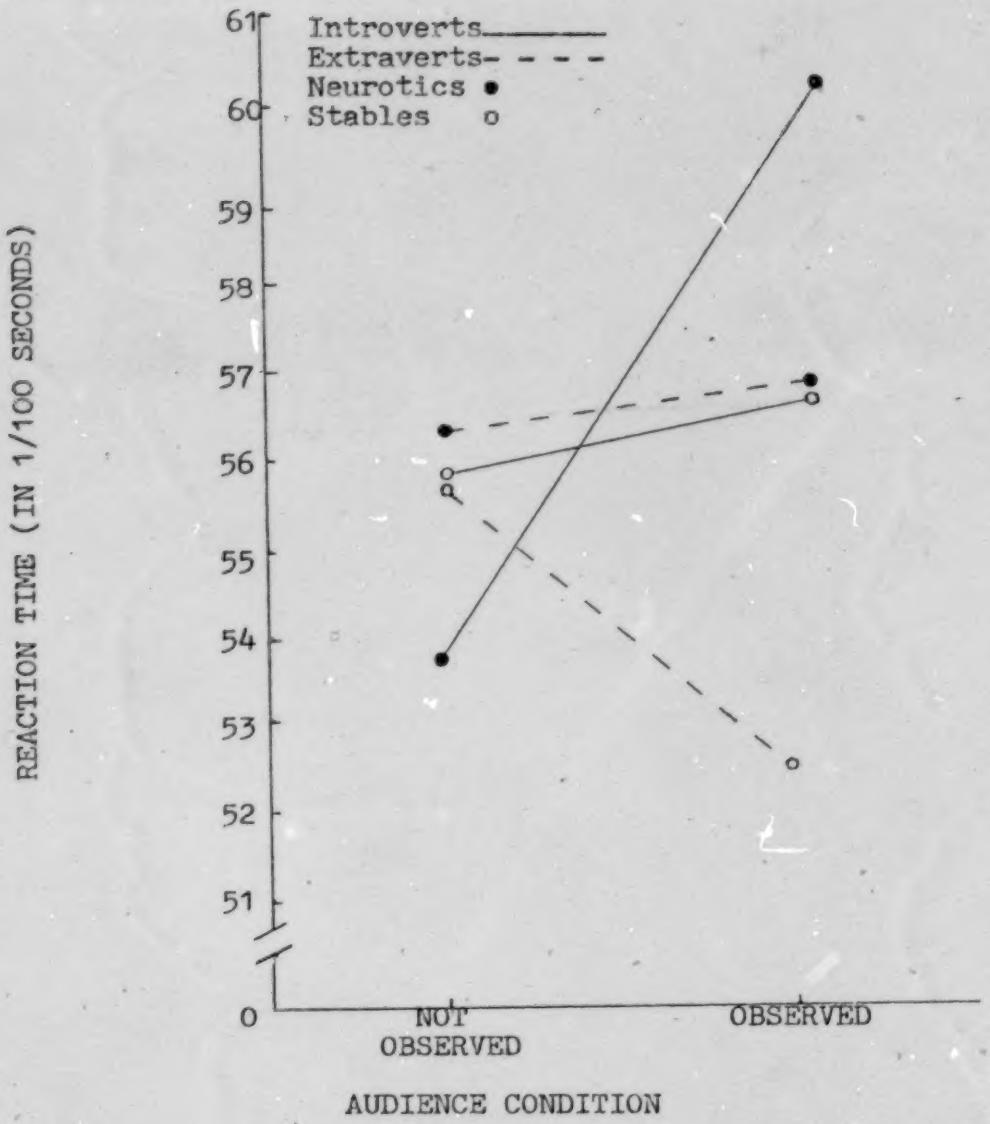

Fig. 4. Reaction time means for neurotic extraverts, neurotic introverts, stable extraverts and stable introverts under observed and unobserved conditions.

no audience present than when they performed in the presence of an audience, the SEs had significantly (Scheffé test, $p < .01$) shorter RTs when they performed in the presence of an audience than when there was no audience present, and the NEs showed no significant differences in RTs due to observer presence. However, contrary to the hypothesized effect of an audience upon their performance, the SIs were significantly (Scheffé test, $p < .01$) faster in the non-observed condition than in the observed condition.

The E x O x A interaction (F (1,176) = 449.4162; $p < .001$) (Fig. 5) shows some unexpected findings. While the performance of the Is was inhibited by the presence of an audience and the performance of the Es was facilitated by an audience, the order of the observed and non-observed conditions apparently caused a difference in RTs. On the observed set of trials, the RTs for the Is who were observed first were significantly (Scheffé test, $p < .01$) lower than the RTs of the Is not observed on the first set of trials. The RTs for Es observed first and then not observed on the second set of trials were significantly (Scheffé test, $p < .01$) lower during the observed condition, but for the Es who were not observed on the first set of trials and were then observed on the second set there were no significant differences in RTs during the two conditions.

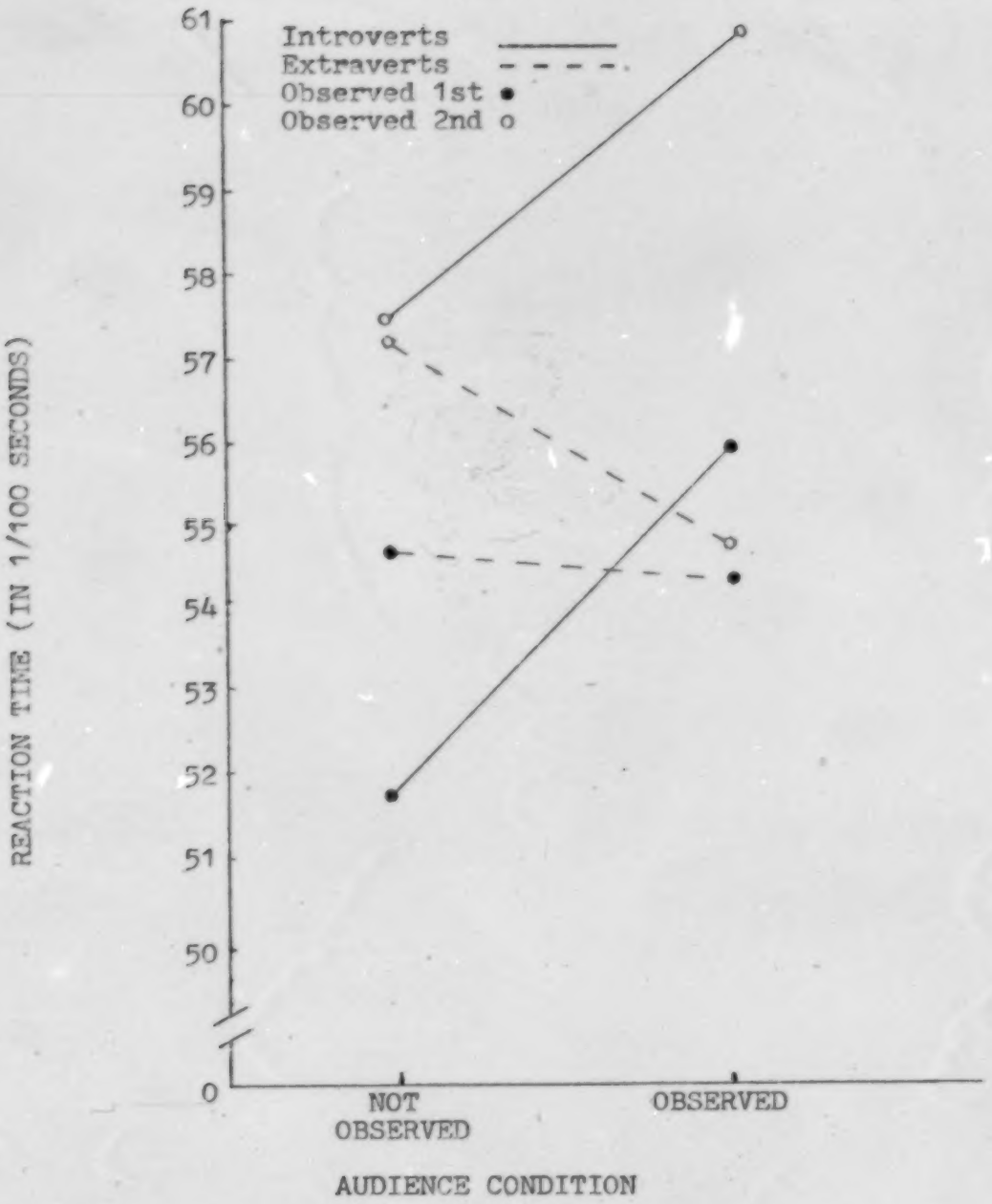

Fig. 5. Reaction time means for extraverts observed on the first set of trials , extraverts not observed on the first set of trials, introverts observed on the first set of trials and introverts not observed on the first set of trials under observed and non-observed conditions.

CHAPTER IV

Discussion

The results support the hypotheses concerning the effects of an audience upon the RT scores of the NIs, NEs and SEs. That SI's performances were significantly ($p < .01$) impaired by audience presence was probably due to the detrimental effect of an audience upon the RTs of Is in general which was shown in the E x A interaction, the N x E x A interaction and the E x O x A interaction. These findings are in general agreement with the proposals of Eysenck (1964) and Sadler and Mefferd (1971) that the Neuroticism-Stability and Extraversion-Introversion dimension reflect the operation of two separate systems which may summate with each other and with external drive forces to determine the overall drive level of the individual which influences performance according to the Yerkes-Dodson Law (Broadhurst, 1959).

The above findings are also generally in accord with Zajonc's (1965) drive interpretation of the social facilitation phenomena and the modification of Zajonc's proposal by Cottrell (1968) which suggests that the presence of others is a learned source of drive. However, an order effect appeared in the E x O x A and O x A interactions which was not anticipated on the basis of the proposals set forth by Zajonc or Cottrell.

In the O x A interaction (Fig. 3) on the first set of trials, the RTs of the subjects observed first were approximately the same as the RTs of subjects not observed first. However, on the second set of trials, the RTs of unobserved subjects were significantly lower than the RTs of the observed subjects. This order effect is likely due to the interaction of introversion and order and audience. This interaction may be examined in the E x O x A interaction where on the first set of trials the observed and unobserved Is had similar RTs. However, on the second set of trials, the RTs of Is not observed second were significantly (Scheffé test, $p < .01$) lower than the RTs of the Is observed on the second set of trials.

Plotting curves of the means of the RTs for blocks of five trials for both Is who were observed first and the Is who were not observed first (Fig. 6) produces curves which are similar in respect to both magnitude and direction for the first set of 30 trials. However, the curves for the second set of trials, when the Is observed first are then observed, are dissimilar in regard to both magnitude and direction. The RTs of the Is observed first become progressively shorter on the second set of trials when Ss were no longer being observed, but the RTs of the Is not observed first appear to plateau at a significantly (Scheffé test, $p < .01$) higher level on the second set of trials when Ss were then observed.

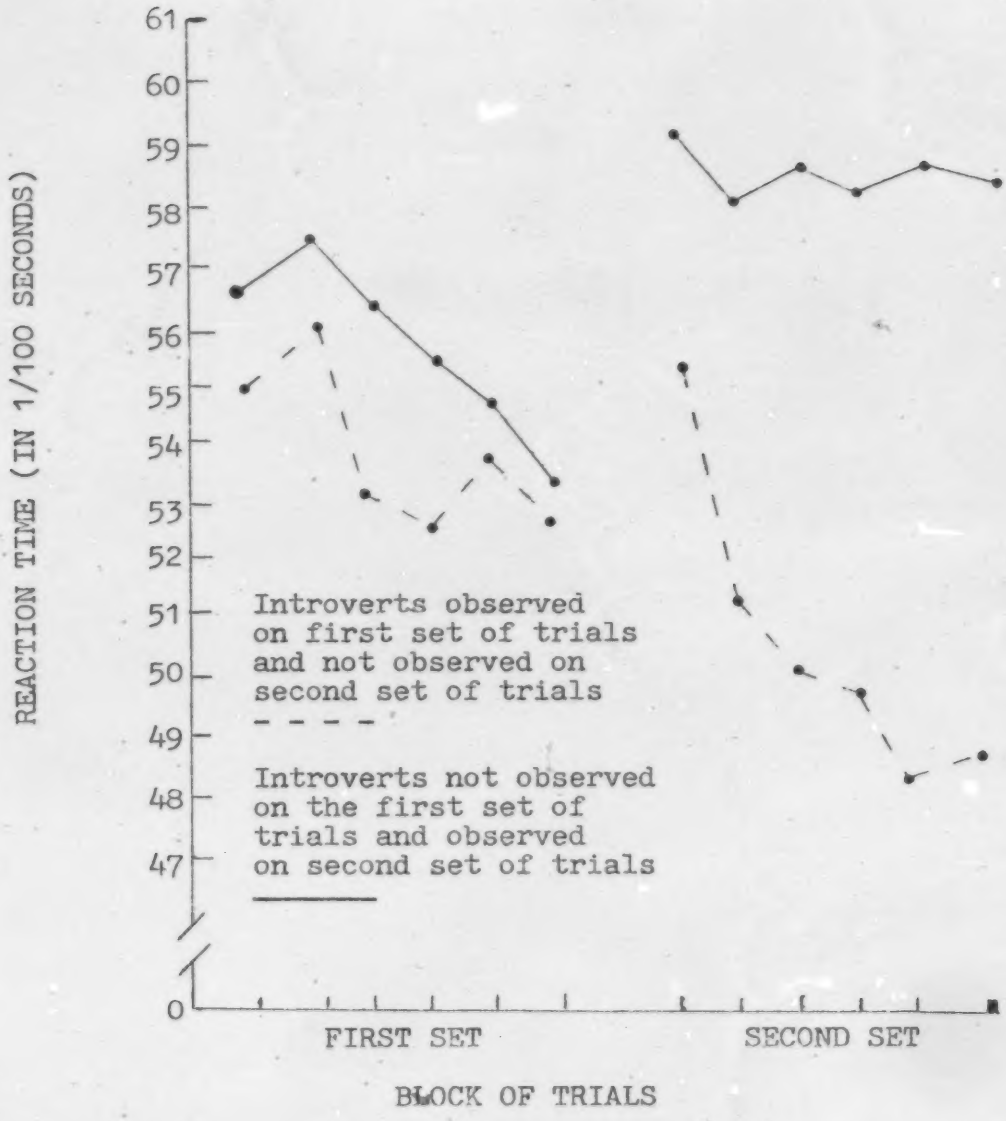

Fig. 6. Reaction time means for blocks of five trials of introverts observed on the first set of trials and introverts not observed on the first set of trials.

The order effects may be tentatively explained by making the assumption that the initial entrance into the experimental situation creates a certain amount of drive in the subjects, which is relatively independent of the number of others present. If this assumption is correct, it follows that all of the Is are aroused at a similar drive level during their first set of trials. This similar level of arousal would explain the highly similar RT curves for both the observed and non-observed Is on the first set of trials. The Is who were not observed on the second set of trials would experience a reduction in drive and a subsequent facilitation in RT on the second set of trials because the observers were no longer present. However, the Is who were observed on the second set of trials would experience an increase in drive and subsequent inhibition of RT because of the presence of the observers.

If the initial entrance into this experiment had drive-producing components, these components could logically be present in many of the experiments being done throughout the field of psychology. This factor which could seriously bias the results of experimentation seems to be a variable on which more research is needed.

In considering the interaction of neuroticism and extraversion and audience, these results underscore the suggestion of Ganzer (1968) that personality variables should by necessity be taken into consideration in

investigations made in the area of social facilitation. These interactions also support the proposition that the outcome of many decision-making processes may be significantly affected by variables such as the individual's drive level, his degree of introversion or extraversion, and the number of other individuals present during the decision-making process.

It appears that Cottrell's (1968) proposal has greater applicability than Zajonc's (1965) proposal in explaining and predicting the outcome of the decision-making processes studied in this experiment. The interaction of N with observer presence as predicted by the Yerkes-Dodson Law serves to underscore the superiority of Cottrell's (1968) proposal. Cottrell's (1968) proposal stresses the importance of considering learning history when investigating audience effects. Cottrell's assumption that the presence of others is a learned source of drive allows his proposal to explain both the finding of this study that the performance of Ns is more detrimentally affected on a RT task than is the performance of stables and Ganzer's finding that audience presence is more detrimental for high-anxious than for low anxious subjects. Zajonc's (1965) proposal that the presence of others facilitates performance is unable to account for high-arousal and low-arousal subjects being affected differently by the presence of others. In fact, Zajonc's proposal fails to

account for individuals who differ in terms of any personality dimension being affected differently by the presence of others. Zajonc's failure to consider personality differences is a serious oversight in view of the results of this study and the results of Ganzer's (1968) study which indicate that personality dimensions are factors which should be taken into consideration when interpreting audience effects.

CHAPTER V

Summary

The purpose of this study was to investigate the effects of an audience upon the performance of neurotic introverts, stable introverts, neurotic extraverts, and stable extraverts on a simple choice reaction time task. On the basis of a proposal by Eysenck it was expected that a source of external drive (audience presence) would interact with the arousal systems of neuroticism-stability and introversion-extraversion to differentially affect reaction time performance. According to the Yerkes-Dodson Law (Broadhurst, 1959), an external source of drive should facilitate the performance of individuals who are minimally aroused (stable extraverts) and inhibit the performance of individuals who are maximally aroused (neurotic introverts).

Subjects were 96 female introductory psychology students selected on the basis of extreme scores of the Neuroticism and Extraversion scales of the Eysenck Personality Inventory. The subjects were divided into four groups (neurotic introverts, neurotic extraverts, stable introverts and stable extraverts). Each of the four groups was comprised of 24 students.

Each subject performed two sets of 30 trials on a choice reaction time task. One of the sets of trials was in the presence of two female observers and on the other

set of trials the observers were not present. In each group, the order of audience-no audience conditions was counterbalanced. Mean reaction times for each subject within audience condition were derived and analyzed using a 2 (audience-no audience) x 2 (introversion-extraversion) x 2 (neuroticism-stability) x 2 (order of audience) mixed analysis of variance.

The results of the analysis of variance supported the following hypotheses:

1. Neurotic-introverts' reaction time is longer in the presence of an audience than in a situation in which their performance is not observed by an audience.

2. Stable-extraverts' reaction time is shorter in the presence of an audience than in a situation in which their performance is not observed by an audience.

3. Neurotic-extraverts' reaction time is not affected to a significant degree by the presence of an audience.

However, contrary to the hypothesized effect of an audience upon their performance, the stable-introverts were significantly (Scheffé test, $p < .01$) faster in the no audience condition than in the audience condition. This unexpected inhibition of stable-introverts' performance in the presence of an audience can be explained in the terms

of overall inhibition of introverts' reaction time by audience presence.

Another unexpected phenomenon was shown in the extraversion x order x audience condition interaction. The reaction time of extraverts was shorter in the presence of an audience only if the audience condition preceded the no audience condition. In the case of introverts, their reaction was longer in the presence of an audience regardless of the order of audience condition.

The results of this study support the proposals of Eysenck (1964) that the Neuroticism-Stability and Extraversion-Introversion dimensions reflect the operation of two separate systems which may summate with each other and with external drive forces to determine the overall drive level of the individual which influences performance according to the Yerkes-Dodson Law. These results also indicate that the presence of an audience does not always facilitate performance as Zajonc (1965) has proposed. Instead, personality dimensions such as neuroticism and extraversion may interact with audience effects and should be considered when interpreting audience effects.

It was also proposed in this study, that in some instances, the initial entrance into a psychological experiment may have drive-producing components. If this proposal is correct, a great deal of the results of psychological experiments may be biased by this factor.

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APPENDIX A

INSTRUCTIONS

The following instructions were read to each subject as an explanation of how the reaction time apparatus operates:

> On the box in front of you are four lights. In front of each of the lights is a small button. When I switch on one of the lights, I want you to press the corresponding button. By pushing the button, you will turn off the light. I would like for you to push the corresponding button as fast as you can when you see a light come on. I'll let you practice ten times before I start recording the time that it takes you to turn the lights off.

APPENDIX B

PRACTICE ORDER OF PRESENTATION OF LIGHTS

DURING REACTION TIME TRIALS

Trial	Light Presented
1	4 green
2	3 blue
3	1 red
4	2 white
5	3 blue
6	2 white
7	1 red
8	4 green
9	1 red
10	2 white

ORDER ONE OF PRESENTATION OF LIGHTS

DURING REACTION TIME TRIALS

Trial	Light Presented	Trial	Light Presented
1	1 red	16	3 blue
2	3 blue	17	2 white
3	4 green	18	4 green
4	2 white	19	1 red
5	4 green	20	4 green
6	1 red	21	3 blue
7	3 blue	22	1 red
8	1 red	23	2 white
9	4 green	24	3 blue
10	2 white	25	2 white
11	1 red	26	4 green
12	2 white	27	3 blue
13	3 blue	28	2 white
14	1 red	29	1 red
15	4 green	30	3 blue

ORDER TWO OF PRESENTATION OF LIGHTS

DURING REACTION TIME TRIALS

Trial	Light Presented	Trial	Light Presented
1	3 blue	16	4 green
2	1 red	17	2 white
3	3 blue	18	4 green
4	2 white	19	2 white
5	4 green	20	3 blue
6	2 white	21	1 red
7	1 red	22	4 green
8	2 white	23	2 white
9	3 blue	24	3 blue
10	1 red	25	1 red
11	4 green	26	4 green
12	2 white	27	1 red
13	3 blue	28	3 blue
14	1 red	29	1 red
15	2 white	30	4 green

APPENDIX C

SUMMARY TABLE OF THE ANALYSIS OF VARIANCE

OF THE MEAN REACTION TIME SCORES

SOURCE	SS	df	MS	F	p
Between Ss Variance	164.33813	96			
Extraversion	.77521	1	.7721	.4251	N.S.
Neuroticism	1.33333	1	1.33333	.7311	N.S.
Order	.03000	1	.03000	.0614	N.S.
Extraversion x Neuroticism	.42188	1	.42188	.2313	N.S.
Extraversion x Order	.28396	1	.28396	.1557	N.S.
Neuroticism x Order	.06750	1	.06750	.0370	N.S.
Extraversion x Neuroticism x Order	.93645	1	.93645	.5313	N.S.
$Error_b$	160.47813	88	1.823615		

SUMMARY TABLE (CONT.)

SOURCE	SS	df	MS	F	p
Within Ss Variance	16.28104	184			
Audience	.775211	1	.775211	62.1112	.001
Audience x Extraversion	3.198750	1	3.198750	256.2895	.001
Audience x Neuroticism	2.566879	1	2.566879	205.6629	.001
Audience x Order	1.801876	1	1.801876	144.3695	.001
Extraversion x Neuroticism x Audience	.10541	1	.10541	8.4456	.005
Extraversion x Order x Audience	5.609164	1	5.609164	449.4162	.001
Neuroticism x Order x Audience	.000205	1	.000205	.0164	N.S.
Extraversion x Neuroticism x Order x Audience	.035005	1	.035005	2.8046	N.S.
$Error_w$	2.196667	176	.012481		
Total Variance	180.61917				

APPENDIX D

NEUROTICISM SCALE

1. Do you sometimes feel happy, sometimes depressed, without any apparent reason?

2. Do you have frequent ups and downs in mood, either with or without apparent cause?

3. Are you inclined to be moody?

4. Does your mind often wander while you are trying to concentrate?

5. Are you frequently "lost in thought" even when supposed to be taking part in a conversation?

6. Are you sometimes bubbling over with energy and sometimes very sluggish?

EXTRAVERSION SCALE

1. Do you prefer action to planning for action?

2. Are you happiest when you get involved in some project that calls for rapid action?

3. Do you usually take the initiative in making new friends?

4. Are you inclined to be quick and sure in your actions?

5. Would you rate yourself as a lively individual?

6. Would you be very unhappy if you were prevented from making numerous social contacts?

APPENDIX E

REACTION TIME MEANS OF

OBSERVED (O) AND UNOBSERVED (U) CONDITIONS

SUBJECTS NOT OBSERVED ON FIRST SET OF TRIALS

NE			NI			SI			SE		
S	U	O	S	U	O	S	U	O	S	U	O
1)	50	52	13)	54	61	25)	56	56	57)	81	77
2)	75	79	14)	56	49	26)	64	60	38)	56	45
3)	60	61	15)	73	89	27)	50	47	39)	69	60
4)	37	35	16)	54	56	28)	58	59	40)	49	48
5)	37	36	17)	51	55	29)	38	49	41)	53	51
6)	70	72	18)	58	66	30)	67	63	42)	38	34
7)	58	59	19)	55	63	31)	61	57	43)	56	56
8)	44	49	20)	62	65	32)	59	70	44)	54	50
9)	56	55	21)	52	58	33)	60	67	45)	47	43
10)	52	57	22)	69	71	34)	61	63	46)	50	46
11)	59	70	23)	56	64	35)	58	60	47)	50	49
12)	50	63	24)	46	50	36)	63	63	48)	61	58

REACTION TIME MEANS (CONT.)

SUBJECTS OBSERVED ON THE FIRST SET OF TRIALS

	NE			NI			SI			SE	
S	O	U	S	O	U	S	O	U	S	O	U
49)	56	60	61)	78	69	73)	56	58	85)	62	65
50)	50	47	62)	51	44	74)	42	42	86)	53	53
51)	44	50	63)	56	47	75)	73	65	87)	52	56
52)	53	57	64)	62	57	76)	66	61	88)	49	54
53)	55	62	65)	58	46	77)	50	52	89)	61	61
54)	65	66	66)	50	39	78)	32	37	90)	49	53
55)	72	67	67)	48	44	79)	52	50	91)	76	82
56)	53	48	68)	62	60	80)	49	49	92)	51	56
57)	50	52	69)	53	47	81)	55	50	93)	47	48
58)	60	62	70)	50	45	82)	55	56	94)	41	44
59)	62	71	71)	61	45	83)	57	59	95)	45	40
60)	56	61	72)	69	57	84)	60	61	96)	54	57